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Horace J. Andrews  
*Iowa State College*

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## The Michigan Land Economic Survey

Horace J. Andrews, Director

For two summers, 1922 and 1923, a peculiar form of so-called survey has been carried on in Michigan. Inventory of all natural resources and economic conditions describes this work better than the word "survey." Its official title, however, is "The Michigan Land Economic Survey." It is a new type of work for a commonwealth to carry on, and it is hoped by many that, if its findings prove of value, similar or identical work will be done in other states having land problems like those of Michigan.

Let us first look into the reasons for making this survey and its early history. The work is confined to the northern part of the lower peninsula and the upper peninsula. All of the land in the state is glaciated and in the upper part of the state there are large areas of light, poor, sandy soils. The bulk of all this area was once covered with a good stand of timber, both pine and hardwoods. The first development in the region took place when the lumbermen started operations. In a good many counties there was but little settlement or development at all until the logging camps and mills were put in. As long as logging and milling were carried on there was a certain prosperity in the country. Settlers came in and small farms were cleared up. These farmers made a go of it even though they often located on poor soils instead of the better ones because there was always work for a man, his boys and his teams in the logging camps in the winter time. He usually had a good local market in the camps and at the mill for his surplus hay, grains, milk, butter and eggs. Most of the counties soon developed regular county organizations with a county seat, courthouse and the regular corps of county officers. The bulk of the taxes in the county were, of course, paid by the lumber companies who owned practically all of the land and often most of the voters. Schools, roads, etc., were paid for by these lumber companies as they saw fit. As the counties grew older, some of the lumber companies cut out their holdings and took camps and mills to new localities where there was more timber to be cut. They still had the land on their hands, however. As soon as they had cut over a tract they usually tried to sell it for farm land more or less regardless of its quality or fitness for agriculture. Many settlers from the outside were brought in and put on lands where they were beaten from the start due to poor soils and a de-

clining local market. In practically no case was any attempt made to sort out cut-over lands first and develop the county on this basis. Big blocks of the poorest soil, land so poor that it never even grew good timber, were turned over to professional land operators at very cheap prices. These operators ran selling campaigns in Chicago and other cities to people who wanted to get back to the land but who usually knew very little about farming or soil values. They also operated in the corn belt, Ohio, Illinois and Indiana and sold to farmers who were interested in cheap land. It was astonishing how many people bought land without ever seeing it and also how many bought land that was light and poor even after seeing it.

Even after all their efforts at selling cut-over lands there were still vast areas unsold. Lumbermen usually hung on to these and paid taxes and interest charges on them in the vain hope that some day the whole country would be developed agriculturally.

Now, as some of the operators dropped out and new settlers came in, political control in a county often passed out of the operators' hands and the local people had things their own way. The remaining standing timber offered the biggest opportunity for obtaining taxes for roads, schools, etc., and the local county officials taxed the lumber companies on the theory that they were able to pay. They were too short sighted in most cases to see that this policy would make lumbermen cut out as soon as possible to avoid this burden of taxation. When this happened as it did, the big market for labor and supplies left the country. This meant that the cash income for most people had left. The country was relatively new. Outside markets were hard and expensive to reach. The values received from products raised on poor soil, shipped to distant markets and competing with products raised more cheaply on better soils, were too small to make the game worth while. Many quit, others stuck on, not knowing where to go or what to turn to. They were, if located on the better soils, able to raise enough to supply family needs and got their cash from going over the cut-over lands and swamps and cutting out pulpwood, cedar ties, excelsior bolts, etc. Many of them were probably supported by children who went away to the cities to work. The big areas of cut-over land with their large amounts of brush and slash never escaped fire for any length of time. Large areas were burned over and reburned at regular periods after they had grown enough wood material to make another fire. Other areas escaped fire for varying periods of time and today we have

second growth of so-called scrub; oaks, poplar, birch, jack pine, etc., of various ages.

So we find some of the counties in the state practically bankrupt as an organization. They are receiving more from the state in school, road and police funds than they are returning in the form of taxes. They have farmers on all types of soils from the best to the poorest, and at the same time there are large areas of good raw land undeveloped, but in the same township with this good land there may be a block of the poorest land being pushed for sale by some land shark. In the same township we can find some farmers fairly well off and others about starved out on poor soils. We can find thousands of acres of land reverted to the state for non-payment of taxes, scores of abandoned farms, thousands of acres fire swept, idle and non-productive of even scrub timber.



FORMERLY A VENERABLE FOREST

There will also be many acres of different sized second growth and with new demands for wood and wood products many of these stands that were considered worthless scrub a few years ago now have a merchantable value.

What about this land that has reverted to the state and what about the many other acres that will revert in the near future? Is it non-agricultural and if so, will it raise timber? If it will raise timber, what kind will it raise? Will this come naturally or will it have to be planted? How many acres of good, poor or medium soil are there in a country? Can a county

as a unit handle its poor lands in timber or is it a state problem? What should be done about fire? If the county has good lakes, streams and woods, how much fish and game will they produce and what is the money value of this to the county? In other words, what is tourist traffic worth to the county? How much water power is there and where is it? What is it worth? These are samples of many questions which arise in connection with these counties. No one man or group of men have ever known or now know the answers. Ideas of different parties differ according to how their points of view are influenced by personal interests in the country. What shall be the policy of the state in land matters in these counties? What can the county itself do?

When a business organization gets in a bad way and goes bankrupt, the receivers usually take an inventory of its property and condition in order to decide what to do with it. They are not so much interested in what happened, whether it was mismanaged, etc., as in the cold facts as to just what assets it has, where they are and what they are worth. They have to have these facts in order to decide what to do. So they take inventory and get the facts.

The same with a county or group of counties in a bad way. In order to know what to do, the state and county want the facts. In this case the facts have to do with kind, location and amounts of natural resources including land, crops, timber, water power, recreational values, etc.

Several years ago far-seeing people in the state were aware that things were not all o. k. The state Geologist got a bill through the Legislature authorizing money for such a survey but war came on and the money returned to the state. Later the Michigan Academy of Science became interested in the problem and got it started through a co-operative arrangement. The State Departments of Agriculture and Conservation, the Michigan Agricultural College, and the University of Michigan got together and put up money to carry on the survey in Charlevoix County in the summer of 1922. The Legislature failed to make an appropriation for continuing the work the following summer, but the United States Senate Committee on Conservation held hearings in Michigan in the spring of 1923 and was impressed with the work done by the survey the previous summer. Other people in the state were impressed with the work and so the Department of Conservation arranged to carry on the work for two years more.

Last summer the survey crew consisted of ten soil surveyors and ten foresters who were mappers or linemen. These men did the bulk of the detailed routine field work. In addition, there were two engineers on water power work, one

land economist on economic problems, one draughtsman, one staff soil surveyor, one staff forester and one inspector, (these three men checking the field crews), two cooks, the field manager and the director.

A field crew consisted of two men, one forester and one soil mapper. The bulk of the information they obtained was recorded in map form. They kept their location by means of compass and chain. Each crew ran twice through a section, down the section line and back through the center. The crews averaged from three to six miles of line a day, depending on type of country. Country one quarter mile each side



SHANTY DAYS ARE BYE GONE DAYS

of the line was mapped. The line proper was chained and all offsets paced. A scale of four inches to the mile was used and outline maps showing all the subdivisions in a section in dotted lines were furnished the mappers. The forester made two sets of maps, a topographic map and a base and cover map. The topographic map was not a contour map but was in the form of a type map. All the country was thrown into one of five classes, namely, level, undulating, slightly sloping, moderately sloping and step. An arbitrary limit expressed in percent of slope was put on each class. The forester then mapped these classes as types, drawing the boundary of each type and putting in the proper slope number. On his base and cover map he showed all streams, roads, trails, telephone lines, houses and other improvements. He also typed

in all land as either agricultural or plow land, permanent pasture or timber. Timber land was further typed according to a classification, based on species. This classification is too detailed for this article, but for example, type number 6 was oak hill type, type No. 7, jack pine, type No. 8, birch and popple, etc. Types were bounded by dotted lines and the type number written in. One, two or three horizontal lines were drawn in under the type number to indicate the condition of stocking, one line meaning well stocked and three lines meaning poorly stocked. The size of the timber was shown by putting the range in diameter of the trees after the type number. For example 7 (3-6) would indicate a moderately stocked stand of jack pine from 3 to 6 inches in diameter. In addition to these maps, the forester also kept a talley sheet on which he recorded information on lakes and streams as his line hit them. This was for use of the biologists who follow the survey crew the following summer.

The soil mapper maps the boundaries of the soil types which are defined according to a classification worked up in conjunction with the U. S. Bureau of Soils.

The hydro-engineers estimated the potential water power of all streams by getting the amount of fall, locating possible power sites, establishing gauging stations and doing some gauging. Their data will only be of value after readings have been taken at the stations for a long enough time to establish the average flow for the stream.

The land economist gathered data on land values, classes of land owners, taxes, exports and imports of agricultural and timber products and other information on the economic status and history of the county.

A crew of biologists studying fish and game will come in after the survey crew during the following summer. They are furnished the maps of cover and data on streams and lakes that the survey crew has gathered.

Last summer two more counties were covered, Ogemaw and Autrim. The crew lived in tents and used army cots and mattresses. Two cooks furnished very good meals and the crew was taken care of in better shape than most field crews. Camp was moved every week or ten days. Transportation and moving was taken care of by three Ford touring cars and one Ford truck.

The job of the survey is to gather the facts in the most thorough and most efficient manner. The men responsible have to determine what facts are worth while and how much ought to be spent in getting them. What to do with the facts when they are obtained and properly presented is another



story. When enough counties are covered so that averages may be determined, the data and information gathered ought to help to do two things; first, to prove to the citizens of the state and the state officials that certain conditions exist; second, to help the state and county governments in the formation and carrying out of a rational land and forest policy.

